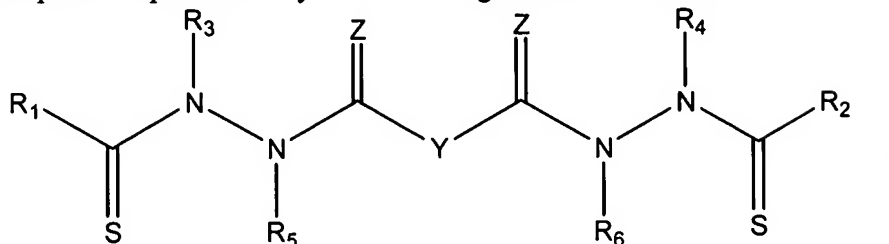


CLAIMS

What is claimed is:

- 5 1. A compound represented by the following structural formula:



- 10 or a pharmaceutically acceptable salt thereof, wherein:

Y is a covalent bond, phenylene group or a substituted or unsubstituted straight chained hydrocarbyl group, or, Y, taken together with both >C=Z groups to which it is bonded, is a substituted or unsubstituted aromatic group;

- 15 R₁ is an aliphatic group, a substituted aliphatic group, a non-aromatic heterocyclic group, or a substituted non-aromatic heterocyclic group;

- 20 R₂-R₄ are independently -H, an aliphatic group, a substituted aliphatic group, a non-aromatic heterocyclic group, a substituted non-aromatic heterocyclic group, an aryl group or a substituted aryl group, or R₁ and R₃ taken together with the carbon and nitrogen atoms to which they are bonded, and/or R₂ and R₄ taken together with the carbon and nitrogen atoms to which they are bonded, form a non-aromatic heterocyclic ring optionally fused to an aromatic ring;

- 25 R₅-R₆ are independently -H, an aliphatic group, a substituted aliphatic group, an aryl group or a substituted aryl group; and

- Z is =O or =S;

- provided that when Y is -CH₂-, R₃ and R₄ are both phenyl and R₅-R₈ are all -H, then R₁ and R₂ are not both methyl.

2. The compound of Claim 1 wherein:

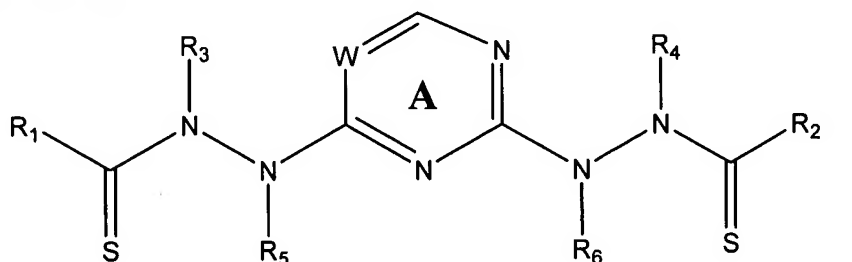
- 30 Y is a covalent bond or a substituted or unsubstituted straight chained hydrocarbyl group, or, Y, taken together with both >C=Z groups to which it is bonded, is a substituted or unsubstituted aromatic group;

R_1 is an aliphatic group or a substituted aliphatic group; and

R_2 - R_4 are independently -H, an aliphatic group, a substituted aliphatic group, an aryl group or a substituted aryl group, or R_1 and R_3 taken together with the carbon and nitrogen atoms to which they are bonded, and/or R_2 and R_4 taken together with the carbon and nitrogen atoms to which they are bonded, form a non-aromatic heterocyclic ring optionally fused to an aromatic ring.

3. The compound of Claim 2 wherein Y, taken together with both $>C=Z$ groups to which it is bonded, is a substituted or unsubstituted arylene group.

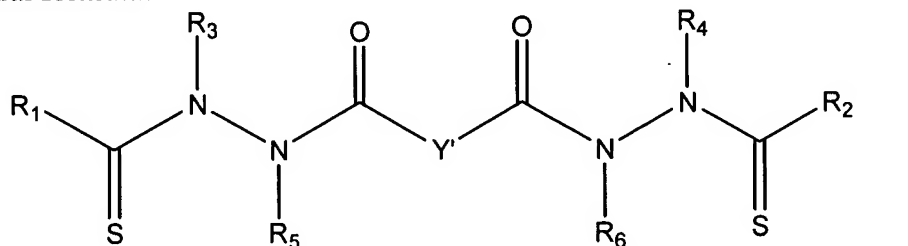
4. The compound of Claim 3 wherein the compound is represented by the following structural formula:



wherein Ring A is substituted or unsubstituted and W is -CH- or -N-.

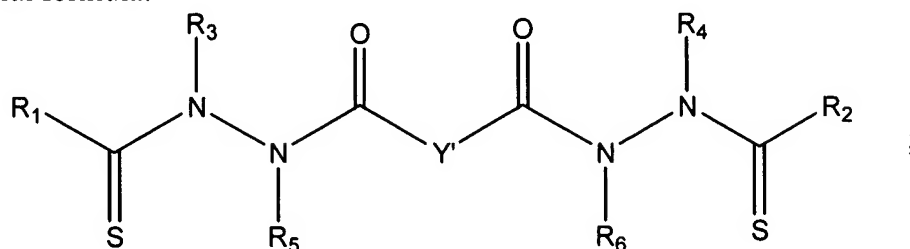
5. The compound of Claim 2 wherein Y is a covalent bond or a substituted or unsubstituted straight chained hydrocarbyl group.

6. The compound of Claim 2 wherein the compound is represented by the following structural formula:



wherein Y' is a covalent bond or -CR₇R₈- and R₇ and R₈ are each independently -H, an aliphatic or substituted aliphatic group, or R₇ is -H and R₈ is a substituted or unsubstituted aryl group, or, R₇ and R₈, taken together, are a C₂-C₆ substituted or unsubstituted alkylene group.

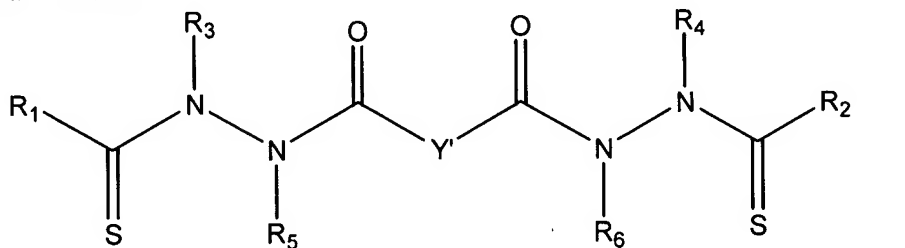
7. The compound of Claim 1 wherein the compound is represented by the following structural formula:



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wherein Y' is a covalent bond or -CR₇R₈-, least one of R₁-R₂ is an aliphatic group, a substituted aliphatic group, a non-aromatic heterocyclic group, or a substituted non-aromatic heterocyclic group and R₅-R₈ are all -H.

- 10 8. The compound of Claim 1 wherein the compound is represented by the following structural formula:



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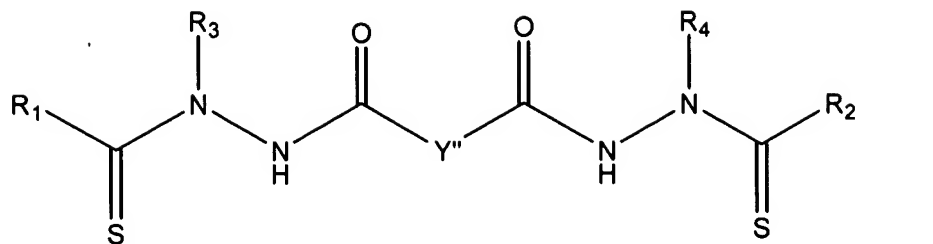
wherein Y' is a covalent bond or -CR₇R₈-, at least one of R₁-R₂ is an unsubstituted C3-C8 cyclic aliphatic group, a substituted C3-C8 cyclic aliphatic group, a substituted straight chained or branched aliphatic group, a substituted non-aromatic heterocyclic group, or an unsubstituted non-aromatic heterocyclic group and R₇ and R₈ are each independently -H, an aliphatic or substituted aliphatic group, or R₇ is -H and R₈ is a substituted or unsubstituted aryl group, or, R₇ and R₈, taken together, are a C2-C6 substituted or unsubstituted alkylene group.

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9. The compound of Claim 8 wherein R₃ and R₄ are both methyl.

10. The compound of Claim 6 wherein the compound is represented by the following structural formula:

25

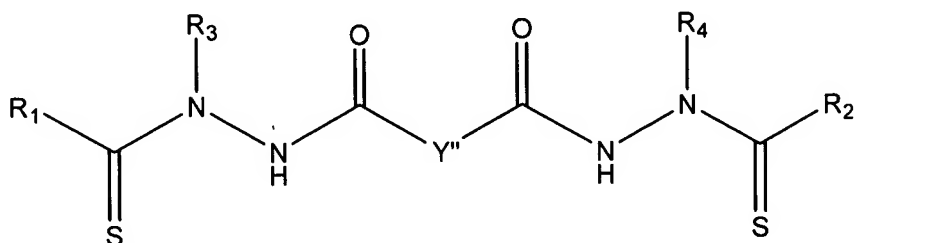


wherein Y'' is a covalent bond or $-\text{CH}_2-$.

5

11. The compound of Claim 10 wherein R_1 and R_2 are the same.
12. The compound of Claim 10 wherein the compound is represented by the following structural formula:

10



wherein Y'' is a covalent bond or $-\text{CH}_2-$ and R_1 is a substituted or unsubstituted aliphatic group and R_2 is a substituted or unsubstituted aryl group.

15

13. The compound of Claim 10 wherein R_1 and R_2 are the same and R_3 and R_4 are the same.
14. The compound of Claim 13 wherein R_3 and R_4 are both a lower alkyl group or a substituted lower alkyl group.

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15. The compound of Claim 14 wherein R_3 and R_4 are both a lower alkyl group substituted with one or more groups selected from $-\text{OH}$, $-\text{Br}$, $-\text{Cl}$, $-\text{I}$, $-\text{F}$, $-\text{OR}^a$, $-\text{O-COR}^a$, $-\text{COR}^a$, $-\text{CN}$, $-\text{NO}_2$, $-\text{COOH}$, $-\text{SO}_3\text{H}$, $-\text{NH}_2$, $-\text{NHR}^a$, $-\text{N}(\text{R}^a\text{R}^b)$, $-\text{COOR}^a$, $-\text{CHO}$, $-\text{CONH}_2$, $-\text{CONHR}^a$, $-\text{CON}(\text{R}^a\text{R}^b)$, $-\text{NHCOR}^a$, $-\text{NRCOR}^a$, $-\text{NHCONH}_2$, $-\text{NHCONR}^a\text{H}$, $-\text{NHCON}(\text{R}^a\text{R}^b)$, $-\text{NR}^c\text{CONH}_2$, $-\text{NR}^c\text{CONR}^a\text{H}$, $-\text{NR}^c\text{CON}(\text{R}^a\text{R}^b)$, $-\text{C}(=\text{NH})-\text{NH}_2$, $-\text{C}(=\text{NH})-\text{NHR}^a$, $-\text{C}(=\text{NH})-\text{N}(\text{R}^a\text{R}^b)$, $-\text{C}(=\text{NR}^c)-$

25

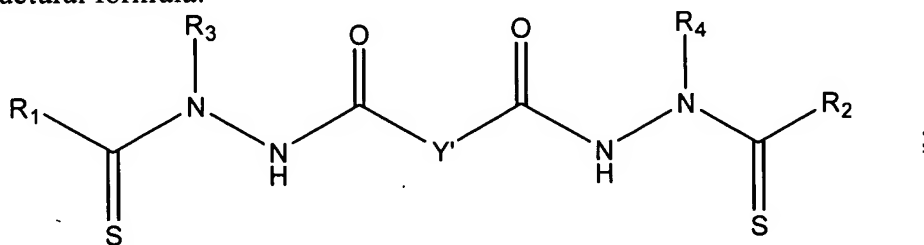
- 5 NH₂, -C(=NR^c)-NHR^a, -C(=NR^c)-N(R^aR^b), -NH-C(=NH)-NH₂, -NH-C(=NH)-NHR^a,
 -NH-C(=NH)-N(R^aR^b), -NH-C(=NR^c)-NH₂, -NH-C(=NR^c)-NHR^a, -NH-C(=NR^c)-
 N(R^aR^b), -NR^dH-C(=NH)-NH₂, -NR^d-C(=NH)-NHR^a, -NR^d-C(=NH)-N(R^aR^b), -NR^d-
 C(=NR^c)-NH₂, -NR^d-C(=NR^c)-NHR^a, -NR^d-C(=NR^c)-N(R^aR^b), -NHNH₂, -NHNHR^a,
 -NHR^aR^b, -SO₂NH₂, -SO₂NHR^a, -SO₂NR^aR^b, -CH=CHR^a, -CH=CR^aR^b, -
 CR^c=CR^aR^b, -CR^c=CHR^a, -CR^c=CR^aR^b, -CCR^a, -SH, -SR^a, -S(O)R^a, -S(O)₂R^a, non-
 aromatic heterocyclic group, substituted non-aromatic heterocyclic group, benzyl
 group, substituted benzyl group, aryl group or substituted aryl group wherein R^a-R^d
 10 are each independently an alkyl group, substituted alkyl group, benzyl, substituted
 benzyl, aromatic or substituted aromatic group, or, -NR^aR^d, taken together, can also
 form a substituted or unsubstituted non-aromatic heterocyclic group.
16. The compound of Claim 14 wherein R₃ and R₄ are both methyl or ethyl.
- 15 17. The compound of Claim 16 wherein R₁ and R₂ are both a substituted or unsubstituted
 aliphatic group.
18. The compound of Claim 17 wherein R₁ and R₂ are both a substituted or unsubstituted
 cyclic aliphatic group.
- 20 19. The compound of Claim 13 wherein R₃ and R₄ are both a heteroaryl group or a
 substituted heteroaryl group.
- 25 20. The compound of Claim 19 wherein R₁ and R₂ are both an aliphatic group or a
 substituted aliphatic group.
21. The compound of Claim 13 wherein R₃ and R₄ are both a substituted phenyl group.
- 30 22. The compound of Claim 21 wherein R₃ and R₄ are both a phenyl group substituted
 with at least one group other than an aliphatic group.
23. The compound of Claim 22 wherein R₁ and R₂ are both an aliphatic group or a
 substituted aliphatic group.
- 35 24. The compound of Claim 21 wherein R₃ and R₄ are both a phenyl group substituted
 with one or more groups selected from -OH, -Br, -Cl, -I, -F, -OR^a, -O-COR^a, -COR^a,

-CN, -NO₂, -COOH, -SO₃H, -NH₂, -NHR^a, -N(R^aR^b), -COOR^a, -CHO, -CONH₂,
 -CONHR^a, -CON(R^aR^b), -NHCOR^a, -NRCOR^a, -NHCONH₂, -NHCONR^aH,
 -NHCON(R^aR^b), -NR^cCONH₂, -NR^cCONR^aH, -NR^cCON(R^aR^b), -C(=NH)-NH₂,
 -C(=NH)-NHR^a, -C(=NH)-N(R^aR^b), -C(=NR^c)-NH₂, -C(=NR^c)-NHR^a,
 5 -C(=NR^c)-N(R^aR^b), -NH-C(=NH)-NH₂, -NH-C(=NH)-NHR^a, -NH-C(=NH)-N(R^aR^b),
 -NH-C(=NR^c)-NH₂, -NH-C(=NR^c)-NHR^a, -NH-C(=NR^c)-N(R^aR^b), -NR^dH-C(=NH)-
 NH₂, -NR^d-C(=NH)-NHR^a, -NR^d-C(=NH)-N(R^aR^b), -NR^d-C(=NR^c)-NH₂, -NR^d-
 C(=NR^c)-NHR^a, -NR^d-C(=NR^c)-N(R^aR^b), -NHNH₂, -NHNHR^a, -NHR^aR^b, -SO₂NH₂,
 -SO₂NHR^a, -SO₂NR^aR^b, -CH=CHR^a, -CH=CR^aR^b, -CR^c=CR^aR^b, -CR^c=CHR^a,
 10 -CR^c=CR^aR^b, -CCR^a, -SH, -SR^a, -S(O)R^a, -S(O)₂R^a, alkyl group, substituted alkyl
 group, non-aromatic heterocyclic group, substituted non-aromatic heterocyclic group,
 benzyl group, substituted benzyl group, aryl group or substituted aryl group wherein
 R^a-R^d are each independently an alkyl group, substituted alkyl group, benzyl,
 substituted benzyl, aromatic or substituted aromatic group, or, -NR^aR^d, taken
 15 together, can also form a substituted or unsubstituted non-aromatic heterocyclic
 group.

25. The compound of Claim 13 wherein R₁ and R₂ are both lower alkyl or a substituted lower alkyl groups.
- 20 26. The compound of Claim 25 wherein R₃ and R₄ are both a phenyl group substituted with at least one group other than an aliphatic group; R₃ and R₄ are both an alkyl group or substituted alkyl group; or R₃ and R₄ are both a heteroaryl or substituted heteroaryl group.
- 25 27. The compound of Claim 25 wherein R₁ and R₂ are both methyl, ethyl, *n*-propyl, *n*-butyl *n*-pentyl or cyclopropyl.
- 30 28. The compound of Claim 25 wherein R₁ and R₂ are both 1-methylcyclopropyl, 2-methylcyclopropyl, cyclobutyl, cyclopentyl, or cyclohexyl.
29. The compound of Claim 25 wherein R₁ and R₂ are both a C3-C8 cyclic alkyl group substituted with at least one lower alkyl group.
- 35 30. The compound of Claim 13 wherein R₁ and R₂ are both a substituted or unsubstituted C3-C8 cyclic aliphatic group.

31. The compound of Claim 30 wherein R_1 and R_2 are both a cyclopropyl group or a substituted cyclopropyl group.
- 5 32. The compound of Claim 30 wherein R_1 and R_2 are both a C3-C8 cyclic aliphatic group substituted with one or more groups selected from -OH, -Br, -Cl, -I, -F, -OR^a, -O-COR^a, -COR^a, -CN, -NO₂, -COOH, -SO₃H, -NH₂, -NHR^a, -N(R^aR^b), -COOR^a, -CHO, -CONH₂, -CONHR^a, -CON(R^aR^b), -NHCOR^a, -NRCOR^a, -NHCONH₂, -NHCONR^aH, -NHCON(R^aR^b), -NR^cCONH₂, -NR^cCONR^aH, -NR^cCON(R^aR^b), -C(=NH)-NH₂, -C(=NH)-NHR^a, -C(=NH)-N(R^aR^b), -C(=NR^c)-NH₂, -C(=NR^c)-NHR^a, -C(=NR^c)-N(R^aR^b), -NH-C(=NH)-NH₂, -NH-C(=NH)-NHR^a, -NH-C(=NH)-N(R^aR^b), -NH-C(=NR^c)-NH₂, -NH-C(=NR^c)-NHR^a, -NH-C(=NR^c)-N(R^aR^b), -NR^dH-C(=NH)-NH₂, -NR^d-C(=NH)-NHR^a, -NR^d-C(=NH)-N(R^aR^b), -NR^d-C(=NR^c)-NH₂, -NR^d-C(=NR^c)-NHR^a, -NR^d-C(=NR^c)-N(R^aR^b), -NHNH₂, -NHNHR^a, -NHR^aR^b, -SO₂NH₂, -SO₂NHR^a, -SO₂NR^aR^b, -CH=CHR^a, -CH=CR^aR^b, -CR^c=CR^aR^b, -CR^c=CHR^a, -CR^c=CR^aR^b, -CCR^a, -SH, -SR^a, -S(O)R^a, -S(O)₂R^a, alkyl group, substituted alkyl group, non-aromatic heterocyclic group, substituted non-aromatic heterocyclic group, benzyl group, substituted benzyl group, aryl group or substituted aryl group wherein R^a-R^d are each independently an alkyl group, substituted alkyl group, benzyl, substituted benzyl, aromatic or substituted aromatic group, or, -NR^aR^d, taken together, can also form a substituted or unsubstituted non-aromatic heterocyclic group.
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- 15
- 20

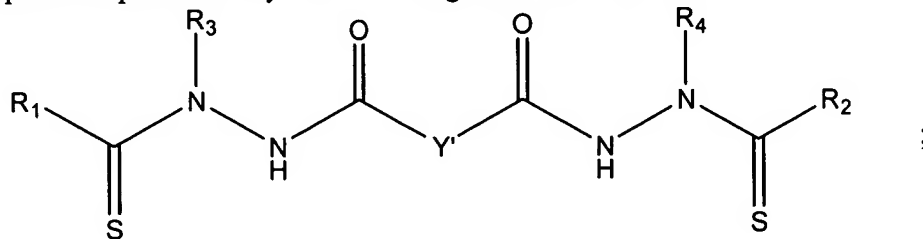
- 25 33. The compound of Claim 5 wherein the compound is represented by the following structural formula:



wherein Y' is a covalent bond or -CR₇R₈-.

- 30 34. The compound of Claim 33 wherein R₇ and R₈ are different.

- 30 39. A compound represented by the following structural formula:



or a physiologically acceptable salt thereof, wherein:

Y' is a covalent bond or -CR₇R₈-;

R₁ and R₂ are both a substituted or unsubstituted aliphatic group;

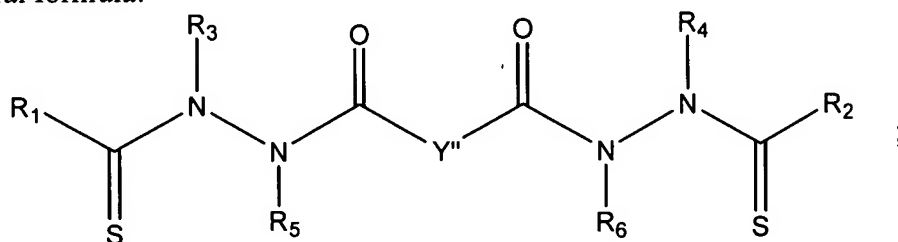
5 R₃ and R₄ are both -H, methyl or ethyl; and

R₇ is -H and R₈ is -H or methyl.

40. The compound of Claim 39 wherein R₁ and R₂ are both C3-C8 cyclic aliphatic group substituted with one or more groups selected from -OH, -Br, -Cl, -I, -F, -OR^a, -O-COR^a, -COR^a, -CN, -NO₂, -COOH, -SO₃H, -NH₂, -NHR^a, -N(R^aR^b), -COOR^a, -CHO, -CONH₂, -CONHR^a, -CON(R^aR^b), -NHCOR^a, -NRCOR^a, -NHCONH₂, -NHCONR^aH, -NHCON(R^aR^b), -NR^cCONH₂, -NR^cCONR^aH, -NR^cCON(R^aR^b), -C(=NH)-NH₂, -C(=NH)-NHR^a, -C(=NH)-N(R^aR^b), -C(=NR^c)-NH₂, -C(=NR^c)-NHR^a, -C(=NR^c)-N(R^aR^b), -NH-C(=NH)-NH₂, -NH-C(=NH)-NHR^a, -NH-C(=NH)-N(R^aR^b), -NH-C(=NR^c)-NH₂, -NH-C(=NR^c)-NHR^a, -NH-C(=NR^c)-N(R^aR^b), -NR^dH-C(=NH)-NH₂, -NR^d-C(=NH)-NHR^a, -NR^d-C(=NH)-N(R^aR^b), -NR^d-C(=NR^c)-NH₂, -NR^d-C(=NR^c)-NHR^a, -NR^d-C(=NR^c)-N(R^aR^b), -NHNH₂, -NHNHR^a, -NHR^aR^b, -SO₂NH₂, -SO₂NHR^a, -SO₂NR^aR^b, -CH=CHR^a, -CH=CR^aR^b, -CR^c=CR^aR^b, -CR^c=CHR^a, -CR^c=CR^aR^b, -CCR^a, -SH, -SR^a, -S(O)R^a, -S(O)₂R^a, alkyl group, substituted alkyl group, non-aromatic heterocyclic group, substituted non-aromatic heterocyclic group, benzyl group, substituted benzyl group, aryl group or substituted aryl group wherein R^a-R^d are each independently an alkyl group, substituted alkyl group, benzyl, substituted benzyl, aromatic or substituted aromatic group, or, -NR^aR^d, taken together, can also form a substituted or unsubstituted non-aromatic heterocyclic group.

41. The compound of Claim 6 wherein R₅ and R₆ are the same.

42. The compound of Claim 41 wherein the compound is represented by the following structural formula:



wherein Y'' is a covalent bond or -CH₂.

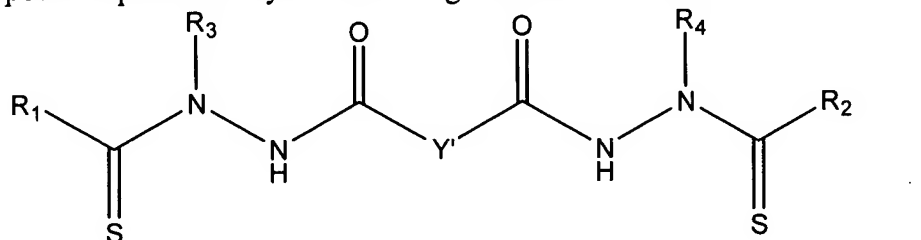
43. The compound of Claim 42 wherein R₅ and R₆ are both a lower alkyl group or a phenyl group.

44. The compound of Claim 43 wherein R₅ and R₆ are both a methyl group.

45. The compound of Claim 43 wherein R₁ and R₂ are both a lower alkyl group or substituted lower alkyl group; R₃ and R₄ are both a lower alkyl group or substituted lower alkyl group; and R₅ and R₆ are both a lower alkyl group.

46. The compound of Claim 43 wherein R₁ and R₂ are both a lower alkyl group or substituted lower alkyl group; R₃ and R₄ are both a phenyl or substituted phenyl; and R₅ and R₆ are both a lower alkyl group.

47. A compound represented by the following structural formula:



wherein Y' is a covalent bond or -CR₇R₈-.

or a physiologically acceptable salt thereof, wherein

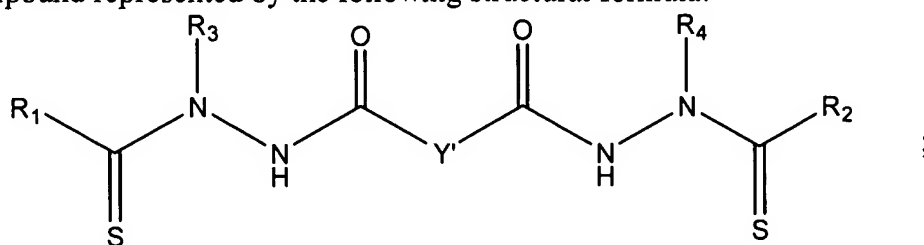
- a) R₁ and R₂ are both cyclopropyl; R₃ and R₄ are both methyl; R₇ and R₈ are both -H;
- b) R₁ and R₂ are both cyclopropyl; R₃ and R₄ are both ethyl; R₇ and R₈ are both -H;
- c) R₁ and R₂ are both cyclopropyl; R₃ and R₄ are both methyl; R₇ is methyl; R₈ is -H;
- d) R₁ and R₂ are both 1-methylcyclopropyl; R₃ and R₄ are both methyl; Y' is bond;

- e) R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;
- f) R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both methyl; R_7 is methyl and R_8 is -H;
- 5 g) R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both methyl; R_7 is ethyl and R_8 is -H;
- h) R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both methyl; R_7 is *n*-propyl and R_8 is -H;
- 10 i) R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both methyl; R_7 and R_8 are both methyl;
- j) R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both ethyl; R_7 and R_8 are both -H;
- k) R_1 and R_2 are both 1-methylcyclopropyl; R_3 is methyl, and R_4 is ethyl; R_7 and R_8 are both -H;
- 15 l) R_1 and R_2 are both 2-methylcyclopropyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;
- m) R_1 and R_2 are both 2-phenylcyclopropyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;
- 20 n) R_1 and R_2 are both 1-phenylcyclopropyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;
- o) R_1 and R_2 are both cyclobutyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;
- p) R_1 and R_2 are both cyclopentyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;
- 25 q) R_1 and R_2 are both cyclohexyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;
- r) R_1 and R_2 are both cyclohexyl; R_3 and R_4 are both phenyl; R_7 and R_8 are both -H;
- s) R_1 and R_2 are both methyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;
- 30 t) R_1 and R_2 are both methyl; R_3 and R_4 are both *t*-butyl; R_7 and R_8 are both -H;
- u) R_1 and R_2 are both methyl; R_3 and R_4 are both phenyl; R_7 and R_8 are both -H;

- v) R_1 and R_2 are both *t*-butyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;
- w) R_1 and R_2 are ethyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H; or
- x) R_1 and R_2 are both *n*-propyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H.

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48. A compound represented by the following structural formula:



wherein Y' is a covalent bond or $-CR_7R_8-$.

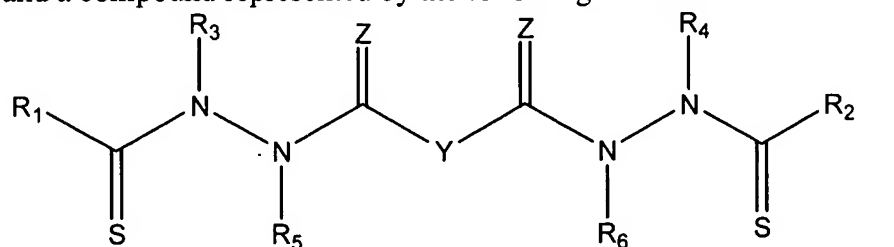
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or a physiologically acceptable salt thereof, wherein:

- a) R_1 and R_2 are both cyclopropyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;
- b) R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both methyl; Y' is bond;
- c) R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both ethyl; R_7 and R_8 are both -H;
- d) R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both methyl; R_7 is methyl; R_8 is -H;
- e) R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both ethyl; R_7 and R_8 are both -H; or
- f) R_1 and R_2 are both methyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H.

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49. A pharmaceutical composition comprising a pharmaceutically acceptable carrier or diluent and a compound represented by the following structural formula:



25

or a pharmaceutically acceptable salt thereof, wherein:

Y is a covalent bond, a phenylene group or a substituted or unsubstituted straight chained hydrocarbonyl group, or, Y, taken together with both $>C=Z$ groups to which it is bonded, is a substituted or unsubstituted aromatic group;

R₁ is an aliphatic group, a substituted aliphatic group, a non-aromatic heterocyclic group, or a substituted non-aromatic heterocyclic group;

R₂-R₄ are independently -H, an aliphatic group, a substituted aliphatic group, a non-aromatic heterocyclic group, a substituted non-aromatic heterocyclic group, an aryl group or a substituted aryl group, or R₁ and R₃ taken together with the carbon and nitrogen atoms to which they are bonded, and/or R₂ and R₄ taken together with the carbon and nitrogen atoms to which they are bonded, form a non-aromatic heterocyclic ring optionally fused to an aromatic ring;

R₅-R₆ are independently -H, an aliphatic group, a substituted aliphatic group, an aryl group or a substituted aryl group; and

Z is =O or =S.

50. The pharmaceutical composition of Claim 49 wherein:

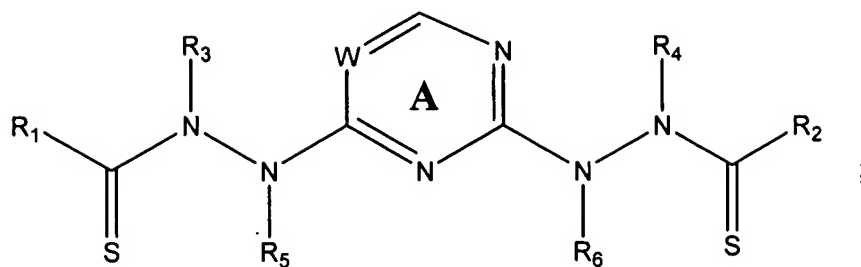
Y is a covalent bond or a substituted or unsubstituted straight chained hydrocarbonyl group, or, Y, taken together with both $>C=Z$ groups to which it is bonded, is a substituted or unsubstituted aromatic group;

R₁ is an aliphatic group or a substituted aliphatic group;

R₂-R₄ are independently -H, an aliphatic group, a substituted aliphatic group, an aryl group or a substituted aryl group, or R₁ and R₃ taken together with the carbon and nitrogen atoms to which they are bonded, and/or R₂ and R₄ taken together with the carbon and nitrogen atoms to which they are bonded, form a non-aromatic heterocyclic ring optionally fused to an aromatic ring.

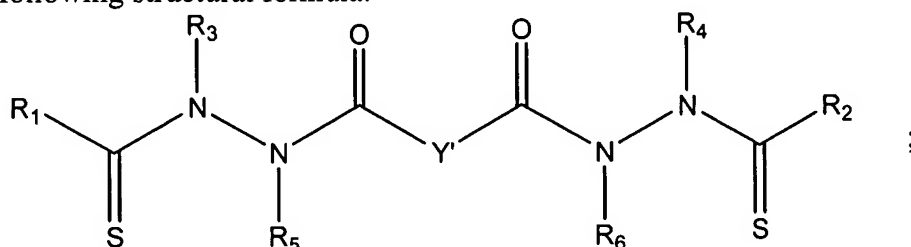
51. The pharmaceutical composition of Claim 50 wherein Y, taken together with both $>C=Z$ groups to which it is bonded, is a substituted or unsubstituted aromatic group.

52. The pharmaceutical composition of Claim 51 wherein the compound is represented by the following structural formula:



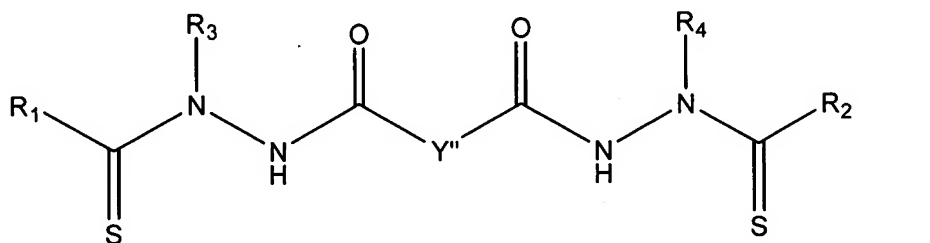
wherein Ring A is substituted or unsubstituted and W is -CH- or -N-.

53. The pharmaceutical composition of Claim 50 wherein Y is a covalent bond or a substituted or unsubstituted hydrocarbyl group.
54. The pharmaceutical composition of Claim 50 wherein the compound is represented by the following structural formula:



wherein Y' is a covalent bond or -CR₇R₈- and R₇ and R₈ are each independently -H, an aliphatic or substituted aliphatic group, or R₇ is -H and R₈ is a substituted or unsubstituted aryl group, or, R₇ and R₈, taken together, are a C₂-C₆ substituted or unsubstituted alkylene group.

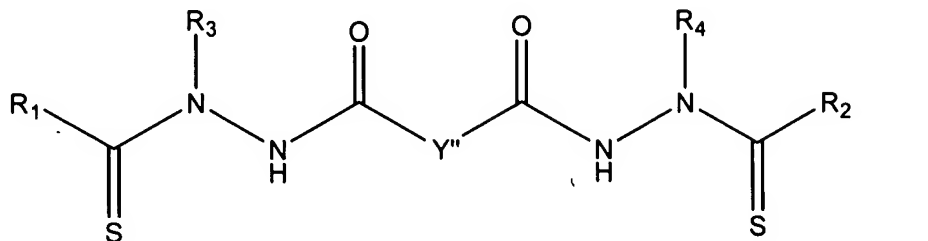
55. The pharmaceutical composition of Claim 50 wherein the compound is represented by the following structural formula:



wherein Y'' is a covalent bond or -CH₂-.

56. The pharmaceutical composition of Claim 55 wherein R₁ and R₂ are different.

57. The pharmaceutical composition of Claim 56 wherein the compound is represented by the following structural formula:

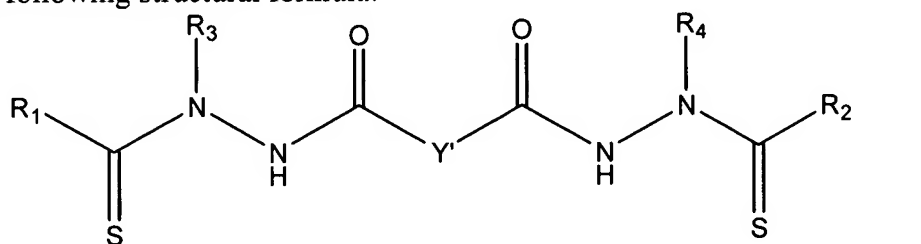


wherein Y'' is a covalent bond or -CH₂- and R₁ is a substituted or unsubstituted aliphatic group and R₂ is a substituted or unsubstituted aryl group.

58. The pharmaceutical composition of Claim 55 wherein R₁ and R₂ are the same and R₃ and R₄ are the same.
59. The pharmaceutical composition of Claim 58 wherein R₃ and R₄ are both a lower alkyl group or a substituted lower alkyl group.
60. The pharmaceutical composition of Claim 58 wherein R₃ and R₄ are both methyl or ethyl.
61. The pharmaceutical composition of Claim 60 wherein R₁ and R₂ are both an aliphatic group or substituted aliphatic group.
62. The pharmaceutical composition of Claim 58 wherein R₁ and R₂ are a C3-C8 cyclic aliphatic group or substituted C3-C8 cyclic aliphatic group group.
63. The pharmaceutical composition of Claim 61 wherein R₁ and R₂ are both a C3-C8 cyclic aliphatic substituted with one or more groups selected from -OH, -Br, -Cl, -I, -F, -OR^a, -O-COR^a, -COR^a, -CN, -NO₂, -COOH, -SO₃H, -NH₂, -NHR^a, -N(R^aR^b), -COOR^a, -CHO, -CONH₂, -CONHR^a, -CON(R^aR^b), -NHCOR^a, -NRCOR^a, -NHCONH₂, -NHCONR^aH, -NHCON(R^aR^b), -NR^cCONH₂, -NR^cCONR^aH, -NR^cCON(R^aR^b), -C(=NH)-NH₂, -C(=NH)-NHR^a, -C(=NH)-N(R^aR^b), -C(=NR^c)-NH₂, -C(=NR^c)-NHR^a, -C(=NR^c)-N(R^aR^b), -NH-C(=NH)-NH₂, -NH-C(=NH)-NHR^a,

-NH-C(=NH)-N(R^aR^b), -NH-C(=NR^c)-NH₂, -NH-C(=NR^c)-NHR^a, -NH-C(=NR^c)-
 N(R^aR^b), -NR^dH-C(=NH)-NH₂, -NR^d-C(=NH)-NHR^a, -NR^d-C(=NH)-N(R^aR^b), -NR^d-
 C(=NR^c)-NH₂, -NR^d-C(=NR^c)-NHR^a, -NR^d-C(=NR^c)-N(R^aR^b), -NHNH₂, -NHNHR^a,
 -NHR^aR^b, -SO₂NH₂, -SO₂NHR^a, -SO₂NR^aR^b, -CH=CHR^a, -CH=CR^aR^b,
 5 -CR^c=CR^aR^b, -CR^c=CHR^a, -CR^c=CR^aR^b, -CCR^a, -SH, -SR^a, -S(O)R^a, -S(O)₂R^a, alkyl
 group, substituted alkyl group, non-aromatic heterocyclic group, substituted non-
 aromatic heterocyclic group, benzyl group, substituted benzyl group, aryl group or
 substituted aryl group wherein R^a-R^d are independently an alkyl group, substituted
 alkyl group, benzyl, substituted benzyl, aromatic or substituted aromatic group, or,
 10 NR^aR^d, taken together, can also form a substituted or unsubstituted non-aromatic
 heterocyclic group.

64. The pharmaceutical composition of Claim 58 wherein R₃ and R₄ are both a phenyl
 group or a substituted phenyl group.
 15
 65. The pharmaceutical composition of Claim 64 wherein R₁ and R₂ are both a C3-C8
 cyclic aliphatic group or substituted C3-C8 cyclic aliphatic group.
 66. The pharmaceutical composition of Claim 64 wherein R₁ and R₂ are both a
 20 cyclopropyl group or substituted cyclopropyl group.
 67. The pharmaceutical composition of Claim 53 wherein the compound is represented
 by the following structural formula:



25

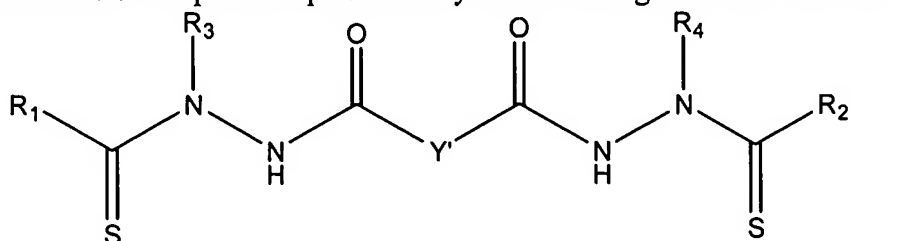
wherein Y' is a covalent bond or -CR₇R₈-.

68. The pharmaceutical composition of Claim 67 wherein R₇ and R₈ are different
 30 69. The pharmaceutical composition of Claim 67 where R₁ and R₂ are the same; R₃ and
 R₄ are the same; and R₇ and R₈ are the same.

70. The pharmaceutical composition of Claim 69 wherein R_1 and R_2 are both an aliphatic group or substituted aliphatic group and R_3 and R_4 are both a lower alkyl group or a substituted lower alkyl group
- 5 71. The pharmaceutical composition of Claim 69 wherein R_1 and R_2 are both a lower alkyl group or a substituted lower alkyl group and R_3 and R_4 are both an aryl group or a substituted aryl group
- 10 72. The pharmaceutical composition of Claim 69 wherein R_1 and R_2 are both a C3-C8 cyclic aliphatic group or substituted C3-C8 cyclic aliphatic group and R_3 and R_4 are methyl, ethyl, phenyl, or thienyl.
- 15 73. The pharmaceutical composition of Claim 72 wherein R_7 and R_8 are both methyl or wherein R_7 and R_8 , taken together, are propylene or butylene.
74. The pharmaceutical composition of Claim 72 wherein R_7 is -H and R_8 is lower alkyl, thienyl, phenyl or benzyl.
- 20 75. The pharmaceutical composition of Claim 72 wherein R_1 and R_2 are both a C3-C8 cyclic aliphatic group substituted with one or more groups selected from -OH, -Br, -Cl, -I, -F, -OR^a, -O-COR^a, -COR^a, -CN, -NO₂, -COOH, -SO₃H, -NH₂, -NHR^a, -N(R^aR^b), -COOR^a, -CHO, -CONH₂, -CONHR^a, -CON(R^aR^b), -NHCOR^a, -NRCOR^a, -NHCONH₂, -NHCONR^aH, -NHCON(R^aR^b), -NR^cCONH₂, -NR^cCONR^aH, -NR^cCON(R^aR^b), -C(=NH)-NH₂, -C(=NH)-NHR^a, -C(=NH)-N(R^aR^b), -C(=NR^c)-NH₂, -C(=NR^c)-NHR^a, -C(=NR^c)-N(R^aR^b), -NH-C(=NH)-NH₂, -NH-C(=NH)-NHR^a, -NH-C(=NH)-N(R^aR^b), -NH-C(=NR^c)-NH₂, -NH-C(=NR^c)-NHR^a, -NH-C(=NR^c)-N(R^aR^b), -NR^dH-C(=NH)-NH₂, -NR^d-C(=NH)-NHR^a, -NR^d-C(=NH)-N(R^aR^b), -NR^d-C(=NR^c)-NH₂, -NR^d-C(=NR^c)-NHR^a, -NR^d-C(=NR^c)-N(R^aR^b), -NHNH₂, -NHNHR^a, -NHR^aR^b, -SO₂NH₂, -SO₂NHR^a, -SO₂NR^aR^b, -CH=CHR^a, -CH=CR^aR^b, -CR^c=CR^aR^b, -CR^c=CHR^a, -CR^c=CR^aR^b, -CCR^a, -SH, -SR^a, -S(O)R^a, -S(O)₂R^a, alkyl groups, substituted alkyl group, non-aromatic heterocyclic group, substituted non-aromatic heterocyclic group, benzyl group, substituted benzyl group, aryl group or substituted aryl group wherein R^a-R^d are each
- 30 independently an alkyl group, substituted alkyl group, benzyl, substituted benzyl,
- 35

aromatic or substituted aromatic group, or, $-NR^aR^d$, taken together, can also form a substituted or unsubstituted non-aromatic heterocyclic group.

76. A pharmaceutical composition comprising a pharmaceutically acceptable carrier or diluent and a compound represented by the following structural formula:



or a physiologically acceptable salt thereof, wherein:

Y' is a covalent bond or $-CR_7R_8-$;

R_1 and R_2 are both a substituted or unsubstituted aliphatic group;

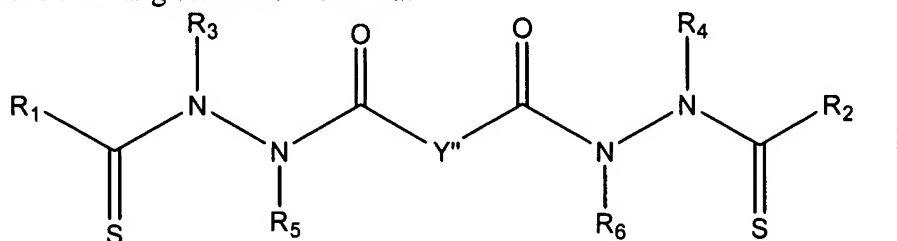
R_3 and R_4 are both $-H$, methyl or ethyl; and

R_7 is $-H$ and R_8 is $-H$ or methyl.

77. The pharmaceutical composition of Claim 76 wherein R_1 and R_2 are both a C3-C8 cyclic aliphatic group substituted with one or more groups selected from $-OH$, $-Br$, $-Cl$, $-I$, $-F$, $-OR^a$, $-O-COR^a$, $-COR^a$, $-CN$, $-NO_2$, $-COOH$, $-SO_3H$, $-NH_2$, $-NHR^a$, $-N(R^aR^b)$, $-COOR^a$, $-CHO$, $-CONH_2$, $-CONHR^a$, $-CON(R^aR^b)$, $-NHCOR^a$, $-NRCOR^a$, $-NHCONH_2$, $-NHCONR^aH$, $-NHCON(R^aR^b)$, $-NR^cCONH_2$, $-NR^cCONR^aH$, $-NR^cCON(R^aR^b)$, $-C(=NH)-NH_2$, $-C(=NH)-NHR^a$, $-C(=NH)-N(R^aR^b)$, $-C(=NR^c)-NH_2$, $-C(=NR^c)-NHR^a$, $-C(=NR^c)-N(R^aR^b)$, $-NH-C(=NH)-NH_2$, $-NH-C(=NH)-NHR^a$, $-NH-C(=NH)-N(R^aR^b)$, $-NH-C(=NR^c)-NH_2$, $-NH-C(=NR^c)-NHR^a$, $-NH-C(=NR^c)-N(R^aR^b)$, $-NR^dH-C(=NH)-NH_2$, $-NR^d-C(=NH)-NHR^a$, $-NR^d-C(=NH)-N(R^aR^b)$, $-NR^d-C(=NR^c)-NH_2$, $-NR^d-C(=NR^c)-NHR^a$, $-NR^d-C(=NR^c)-N(R^aR^b)$, $-NHNH_2$, $-NHNHR^a$, $-NHR^aR^b$, $-SO_2NH_2$, $-SO_2NHR^a$, $-SO_2NR^aR^b$, $-CH=CHR^a$, $-CH=CR^aR^b$, $-CR^c=CR^aR^b$, $-CR^c=CHR^a$, $-CR^c=CR^aR^b$, $-CCR^a$, $-SH$, $-SR^a$, $-S(O)R^a$, $-S(O)_2R^a$, alkyl groups, substituted alkyl group, non-aromatic heterocyclic group, substituted non-aromatic heterocyclic group, benzyl group, substituted benzyl group, aryl group or substituted aryl group wherein R^a - R^d are each independently an alkyl group, substituted alkyl group, benzyl, substituted benzyl, aromatic or substituted aromatic group, or, $-NR^aR^d$, taken together, can also form a substituted or unsubstituted non-aromatic heterocyclic group.

78. The pharmaceutical composition of Claim 53 wherein R_5 and R_6 are the same.

79. The pharmaceutical composition of Claim 78 wherein the compound is represented
5 by the following structural formula:



wherein Y'' is a covalent bond or $-CH_2-$.

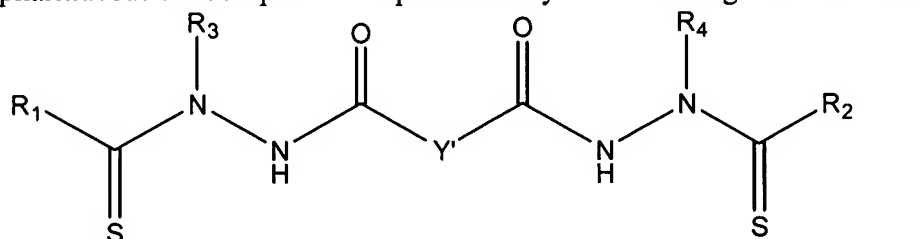
80. The pharmaceutical composition of Claim 79 wherein R_5 and R_6 are both a lower alkyl group or a phenyl group

81. The pharmaceutical composition of Claim 80 wherein R_5 and R_6 are both a methyl group.

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82. The pharmaceutical composition of Claim 79 wherein R_1 and R_2 are both a C3-C8 cyclic aliphatic group or substituted C3-C8 cyclic aliphatic group; R_3 and R_4 are both a lower alkyl group; and R_5 and R_6 are both a lower alkyl group.

83. A pharmaceutical composition represented by the following structural formula:



wherein Y' is a covalent bond or $-CR_7R_8-$.

or a physiologically acceptable salt thereof, wherein:

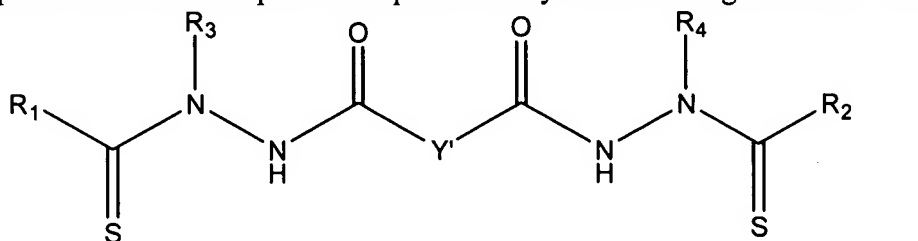
25 a. R_1 and R_2 are both cyclopropyl; R_3 and R_4 are both methyl; R_7 and R_8 are both $-H$;

- b. R₁ and R₂ are both cyclopropyl; R₃ and R₄ are both ethyl; R₇ and R₈ are both -H;
- c. R₁ and R₂ are both cyclopropyl; R₃ and R₄ are both methyl; R₇ is methyl; R₈ is -H;
- 5 d. R₁ and R₂ are both 1-methylcyclopropyl; R₃ and R₄ are both methyl; Y' is bond;
- e. R₁ and R₂ are both 1-methylcyclopropyl; R₃ and R₄ are both methyl; R₇ and R₈ are both -H;
- f. R₁ and R₂ are both 1-methylcyclopropyl; R₃ and R₄ are both methyl; R₇ is methyl and R₈ is -H;
- 10 g. R₁ and R₂ are both 1-methylcyclopropyl; R₃ and R₄ are both methyl; R₇ is ethyl and R₈ is -H;
- h. R₁ and R₂ are both 1-methylcyclopropyl; R₃ and R₄ are both methyl; R₇ is *n*-propyl and R₈ is -H;
- 15 i. R₁ and R₂ are both 1-methylcyclopropyl; R₃ and R₄ are both methyl; R₇ and R₈ are both methyl;
- j. R₁ and R₂ are both 1-methylcyclopropyl; R₃ and R₄ are both ethyl; R₇ and R₈ are both -H;
- k. R₁ and R₂ are both 1-methylcyclopropyl; R₃ is methyl, and R₄ is ethyl; R₇ and R₈ are both -H;
- 20 l. R₁ and R₂ are both 2-methylcyclopropyl; R₃ and R₄ are both methyl; R₇ and R₈ are both -H;
- m. R₁ and R₂ are both 2-phenylcyclopropyl; R₃ and R₄ are both methyl; R₇ and R₈ are both -H;
- 25 n. R₁ and R₂ are both 1-phenylcyclopropyl; R₃ and R₄ are both methyl; R₇ and R₈ are both -H;
- o. R₁ and R₂ are both cyclobutyl; R₃ and R₄ are both methyl; R₇ and R₈ are both -H;
- p. R₁ and R₂ are both cyclopentyl; R₃ and R₄ are both methyl; R₇ and R₈ are both -H;
- 30 q. R₁ and R₂ are both cyclohexyl; R₃ and R₄ are both methyl; R₇ and R₈ are both -H;
- r. R₁ and R₂ are both cyclohexyl; R₃ and R₄ are both phenyl; R₇ and R₈ are both -H;
- 35 s. R₁ and R₂ are both methyl; R₃ and R₄ are both methyl; R₇ and R₈ are both -H;
- t. R₁ and R₂ are both methyl; R₃ and R₄ are both *t*-butyl; R₇ and R₈ are both -H;

- u. R_1 and R_2 are both methyl; R_3 and R_4 are both phenyl; R_7 and R_8 are both -H;
- v. R_1 and R_2 are both t-butyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;
- w. R_1 and R_2 are ethyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;
- x. R_1 and R_2 are both n-propyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;

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84. A pharmaceutical composition represented by the following structural formula:



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wherein Y' is a covalent bond or $-CR_7R_8-$,
or a physiologically acceptable salt thereof, wherein:

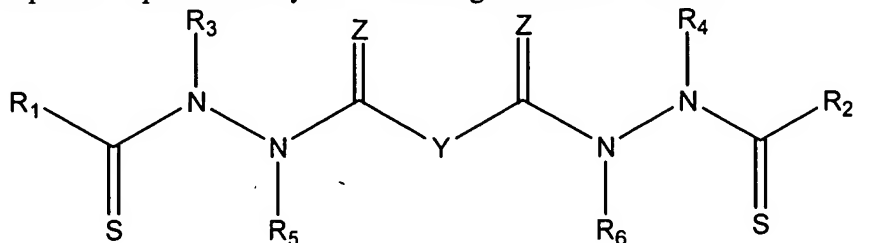
- a) R_1 and R_2 are both cyclopropyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;
- b) R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both methyl; Y' is bond;
- c) R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both ethyl; R_7 and R_8 are both -H;
- d) R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both methyl; R_7 is methyl; R_8 is -H;
- e) R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both ethyl; R_7 and R_8 are both -H;
- f) R_1 and R_2 are both methyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H.

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85. A method of treating a subject with cancer, said method comprising administering to the subject an effective amount of taxol or a taxol analog and an effective amount of a compound represented by the following structural formula:



or a pharmaceutically acceptable salt thereof, wherein:

Y is a covalent bond, a phenylene group or a substituted or unsubstituted hydrocarbyl group, or, Y, taken together with both $>C=Z$ groups to which it is bonded, is a substituted or unsubstituted aromatic group;

R_1 is an aliphatic group, a substituted aliphatic group, a non-aromatic heterocyclic, or a substituted non-aromatic heterocyclic;

R_2 - R_4 are independently -H, an aliphatic group, a substituted aliphatic group, a non-aromatic heterocyclic, a substituted non-aromatic heterocyclic, an aryl group or a substituted aryl group, or R_1 and R_3 taken together with the carbon and nitrogen atoms to which they are bonded, and/or R_2 and R_4 taken together with the carbon and nitrogen atoms to which they are bonded, form a non-aromatic heterocyclic ring optionally fused to an aromatic ring;

R_5 - R_6 are independently -H, an aliphatic group, a substituted aliphatic group, an aryl group or a substituted aryl group;
and Z is =O or =S.

86. The method of Claim 85 wherein:

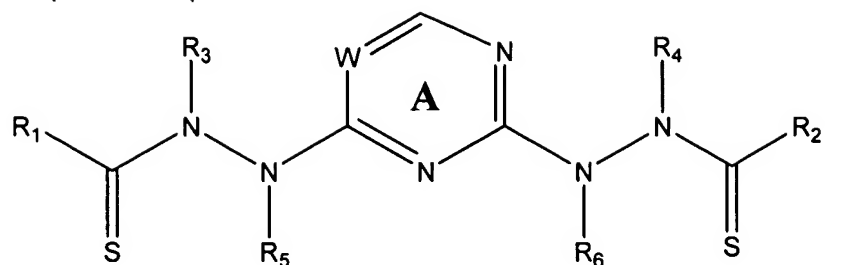
Y is a covalent bond or a substituted or unsubstituted hydrocarbyl group, or, Y, taken together with both $>C=Z$ groups to which it is bonded, is a substituted or unsubstituted aromatic group;

R_1 is an aliphatic group, a substituted aliphatic group;

R_2 - R_4 are independently -H, an aliphatic group, a substituted aliphatic group, an aryl group or a substituted aryl group, or R_1 and R_3 taken together with the carbon and nitrogen atoms to which they are bonded, and/or R_2 and R_4 taken together with the carbon and nitrogen atoms to which they are bonded, form a non-aromatic heterocyclic ring optionally fused to an aromatic ring

87. The method of Claim 86 wherein Y, taken together with both $>C=Z$ groups to which it is bonded, is a substituted or unsubstituted aromatic group

88. The method of Claim 87 wherein the compound is represented by the following structural formula:



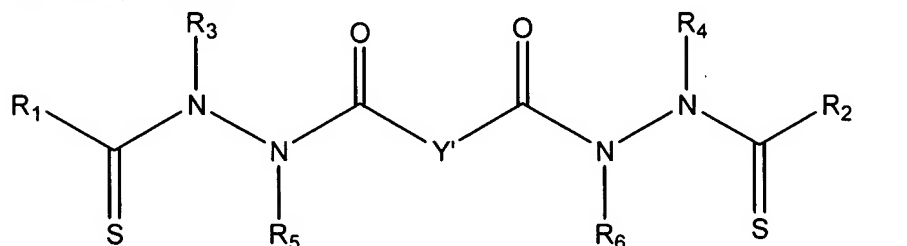
wherein Ring A is substituted or unsubstituted and W is -CH- or -N-.

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89. The method of Claim 86 wherein Y is a covalent bond or a substituted or unsubstituted straight chained hydrocarbyl group.

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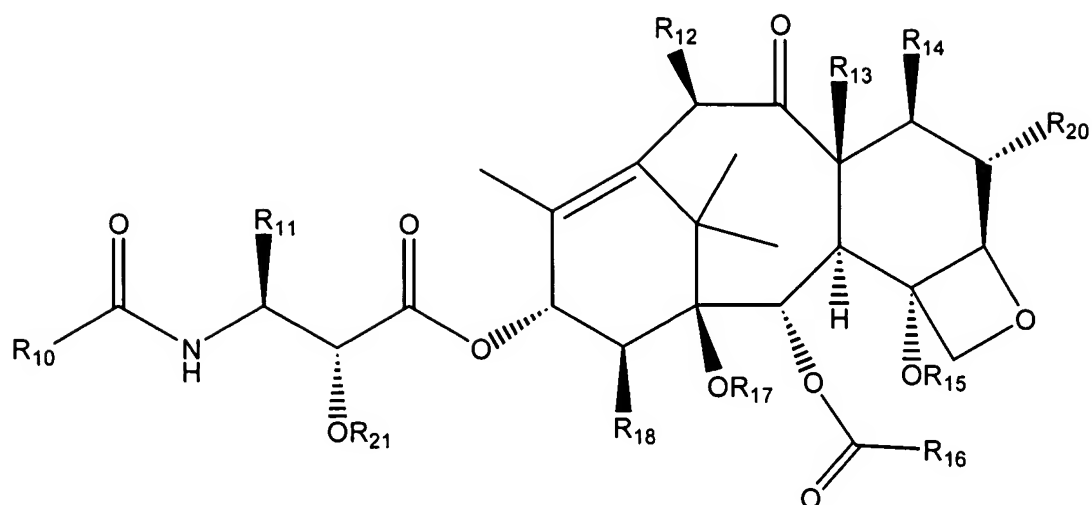
90. The method of Claim 86 wherein the compound is represented by the following structural formula:



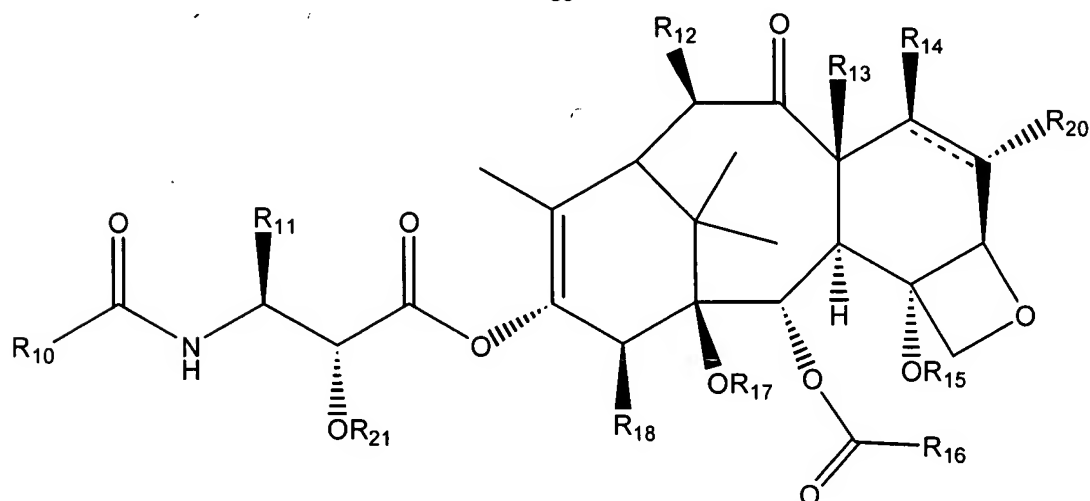
wherein Y' is a covalent bond or -CR₇R₈- and R₇ and R₈ are each independently -H, an aliphatic or substituted aliphatic group, or R₇ is -H and R₈ is a substituted or unsubstituted aryl group, or, R₇ and R₈, taken together, are a C₂-C₆ substituted or unsubstituted alkylene group.

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91. The method of Claim 90 wherein the taxol analog is represented by a structural formula selected from:



or



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wherein:

R_{10} is a lower alkyl group, a substituted lower alkyl group, a phenyl group, a substituted phenyl group, $-SR_{19}$, $-NHR_{19}$ or $-OR_{19}$;

10

R_{11} is a lower alkyl group, a substituted lower alkyl group, an aryl group or a substituted aryl group;

R_{12} is $-H$, $-OH$, lower alkyl, substituted lower alkyl, lower alkoxy, substituted lower alkoxy, $-O-C(O)-(lower\ alkyl)$, $-O-C(O)-(substituted\ lower\ alkyl)$, $-O-CH_2-O-(lower\ alkyl)$ $-S-CH_2-O-(lower\ alkyl)$;

15

R_{13} is $-H$, $-CH_3$, or, taken together with R_{14} , $-CH_2-$;

R₁₄ is -H, -OH, lower alkoxy, -O-C(O)-(lower alkyl), substituted lower alkoxy, -O-C(O)-(substituted lower alkyl), -O-CH₂-O-P(O)(OH)₂, -O-CH₂-O-(lower alkyl), -O-CH₂-S-(lower alkyl) or, taken together with R₂₀, a double bond;

5 R₁₅ -H, lower acyl, lower alkyl, substituted lower alkyl, alkoxymethyl, alkthiomethyl, -OC(O)-O(lower alkyl), -OC(O)-O(substituted lower alkyl), -OC(O)-NH(lower alkyl) or -OC(O)-NH(substituted lower alkyl);

R₁₆ is phenyl or substituted phenyl;

R₁₇ is -H, lower acyl, substituted lower acyl, lower alkyl, substituted, lower alkyl, (lower alkoxy)methyl or (lower alkyl)thiomethyl;

10 R₁₈ -H, -CH₃ or, taken together with R₁₇ and the carbon atoms to which R₁₇ and R₁₈ are bonded, a five or six membered a non-aromatic heterocyclic ring;

R₁₉ is a lower alkyl group, a substituted lower alkyl group, a phenyl group, a substituted phenyl group;

R₂₀ is -H or a halogen; and

15 R₂₁ is -H, lower alkyl, substituted lower alkyl, lower acyl or substituted lower acyl.

92. The method of Claim 91 wherein:

R₁₀ is phenyl, *tert*-butoxy, -S-CH₂-CH-(CH₃)₂, -S-CH(CH₃)₃, -S-(CH₂)₃CH₃, -O-CH(CH₃)₃, -NH-CH(CH₃)₃, -CH=C(CH₃)₂ or *para*-chlorophenyl;

20 R₁₁ is phenyl, (CH₃)₂CHCH₂-, -2-furanyl, cyclopropyl or *para*-toluyl;

R₁₂ is -H, -OH, CH₃CO- or -(CH₂)₂-*N*-morpholino;

R₁₃ is methyl, or, R₁₃ and R₁₄, taken together, are -CH₂-;

R₁₄ is -H, -CH₂SCH₃ or -CH₂-O-P(O)(OH)₂;

R₁₅ is CH₃CO-;

25 R₁₆ is phenyl;

R₁₇ -H, or, R₁₇ and R₁₈, taken together, are -O-CO-O-;

R₁₈ is -H;

R₂₀ is -H or -F; and

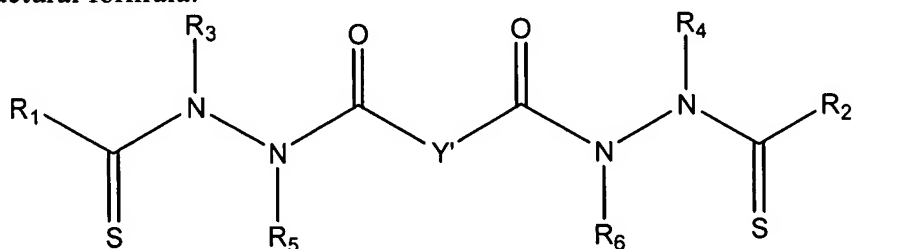
30 R₂₁ is -H, -C(O)-CHBr-(CH₂)₁₃-CH₃ or -C(O)-(CH₂)₁₄-CH₃; -C(O)-CH₂-CH(OH)-COOH, -C(O)-CH₂-O-C(O)-CH₂CH(NH₂)-CONH₂, -C(O)-CH₂-O-CH₂CH₂OCH₃ or -C(O)-O-C(O)-CH₂CH₃.

93. The method of Claim 91 wherein the taxol analog is represented by a structure shown in any one of Figures 5-25.

94. The method of Claim 90 wherein the taxol analog is the copolymer of *N*-(2-hydroxypropyl)methacrylamide, methacryloylglycine-2-hydroxypropylamide and [2aR[2 α ,4 β ,4 β ,6 β ,9 α (2R,3S),11 β ,12 α ,12 α ,12 α]]-6,12b-diacetoxy-9-[3-benzamido-2-(methacryloyl-glycyl-L-phenylalanyl-L-leucyl.glycyloxy)-3-phenylpropionyloxy]-12-benzoyloxy-4,11-dihydroxy-4a,8,13,13-tetramethyl-2a,3,4,4a,5,6,9,10,11,12,12a,12b-dodecahydro-1H-7,11-methanocyclodeca[3,4]benz[1,2-b]oxet-5-one.

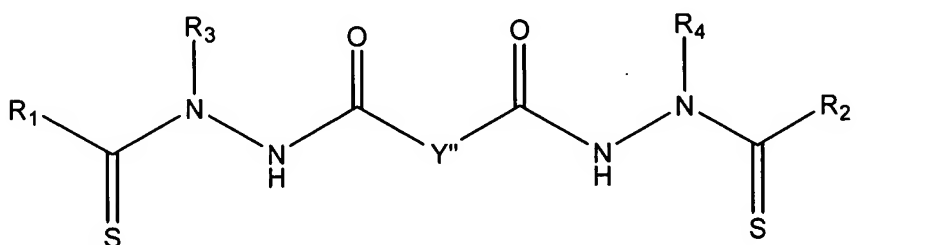
95. The method of Claim 90 wherein the subject is administered taxol or taxotere.

96. The method of Claim 86 wherein the compound is represented by the following structural formula:



wherein Y' is a covalent bond or -CR₇R₈-.

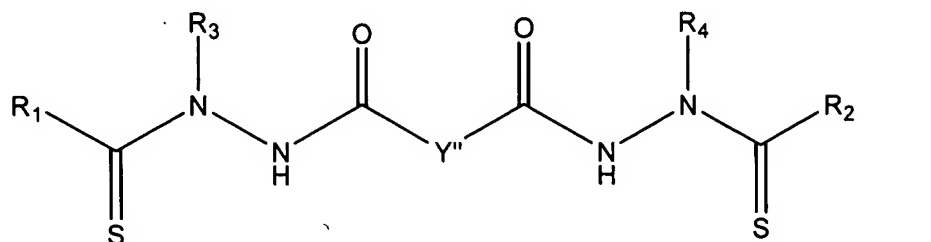
97. The method of Claim 86 wherein the compound is represented by the following structural formula:



wherein Y'' is a covalent bond or -CH₂- and R₇ and R₈ are each independently -H, an aliphatic or substituted aliphatic group, or R₇ is -H and R₈ is a substituted or unsubstituted aryl group, or, R₇ and R₈, taken together, are a C₂-C₆ substituted or unsubstituted alkylene group.

98. The method of Claim 97 wherein R₁ and R₂ are different.

99. The method of Claim 98 wherein the compound is represented by the following structural formula:



5

wherein Y'' is a covalent bond or -CH₂- and R₁ is a substituted or unsubstituted aliphatic group and R₂ is a substituted or unsubstituted aryl group.

100. The method of Claim 97 wherein R₁ and R₂ are the same and R₃ and R₄ are the same.
101. The method of Claim 100 wherein R₃ and R₄ are both a lower alkyl group or a substituted lower alkyl group.
102. The method of Claim 100 wherein R₃ and R₄ are both methyl or ethyl.
103. The method of Claim 103 wherein R₁ and R₂ are both an aliphatic or substituted aliphatic group.
104. The method of Claim 100 wherein R₁ and R₂ are both a substituted or unsubstituted C3-C8 cyclic aliphatic group.
105. The method of Claim 103 wherein R₁ and R₂ are both a C3-C8 cyclic aliphatic group substituted with one or more groups selected from -OH, -Br, -Cl, -I, -F, -OR^a, -O-COR^a, -COR^a, -CN, -NO₂, -COOH, -SO₃H, -NH₂, -NHR^a, -N(R^aR^b), -COOR^a, -CHO, -CONH₂, -CONHR^a, -CON(R^aR^b), -NHCOR^a, -NRCOR^a, -NHCONH₂, -NHCONR^aH, -NHCON(R^aR^b), -NR^cCONH₂, -NR^cCONR^aH, -NR^cCON(R^aR^b), -C(=NH)-NH₂, -C(=NH)-NHR^a, -C(=NH)-N(R^aR^b), -C(=NR^c)-NH₂, -C(=NR^c)-NHR^a, -C(=NR^c)-N(R^aR^b), -NH-C(=NH)-NH₂, -NH-C(=NH)-NHR^a, -NH-C(=NH)-N(R^aR^b), -NH-C(=NR^c)-NH₂, -NH-C(=NR^c)-NHR^a, -NH-C(=NR^c)-N(R^aR^b), -NR^dH-C(=NH)-NH₂, -NR^d-C(=NH)-NHR^a, -NR^d-C(=NH)-N(R^aR^b), -NR^d-C(=NR^c)-NH₂, -NR^d-

25

30

$C(=NR^c)-NHR^a$, $-NR^d-C(=NR^c)-N(R^aR^b)$, $-NHNH_2$, $-NHNHR^a$, $-NHR^aR^b$, $-SO_2NH_2$,
 $-SO_2NHR^a$, $-SO_2NR^aR^b$, $-CH=CHR^a$, $-CH=CR^aR^b$, $-CR^c=CR^aR^b$, $-CR^c=CHR^a$,
 $-CR^c=CR^aR^b$, $-CCR^a$, $-SH$, $-SR^a$, $-S(O)R^a$, $-S(O)_2R^a$, alkyl group, substituted alkyl
 group, non-aromatic heterocyclic group, substituted non-aromatic heterocyclic group,
 5 benzyl group, substituted benzyl group, aryl group or substituted aryl group wherein
 R^a-R^d are independently an alkyl group, substituted alkyl group, benzyl, substituted
 benzyl, aromatic or substituted aromatic group, or, $-NR^aR^d$, taken together, can also
 form a substituted or unsubstituted non-aromatic heterocyclic group.

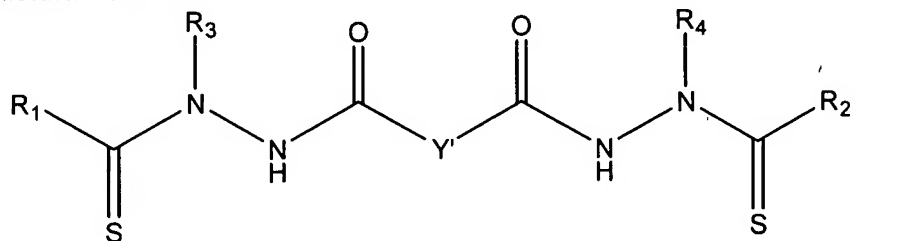
10 106. The method of Claim 100 wherein R_3 and R_4 are both a phenyl group or a substituted phenyl group.

107. The method of Claim 106 wherein R_1 and R_2 are both a C3-C8 cyclic aliphatic or a C3-C8 substituted cyclic aliphatic group.

15

108. The method of Claim 106 wherein R_1 and R_2 are both a substituted aliphatic group.

109. The method of Claim 89 wherein the compound is represented by the following structural formula:



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wherein Y' is a covalent bond or $-CR_7R_8-$.

110. The method of Claim 109 wherein R_7 and R_8 are different.

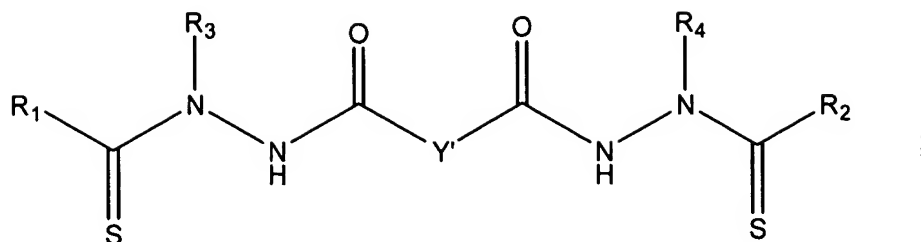
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111. The method of Claim 109 where R_1 and R_2 are the same; R_3 and R_4 are the same; and R_7 and R_8 are the same.

112. The method of Claim 111 wherein R_1 and R_2 are both an aliphatic or substituted aliphatic group and R_3 and R_4 are both a lower alkyl group or a substituted lower alkyl group.

30

113. The method of Claim 111 wherein R₁ and R₂ are both substituted or unsubstituted C3-C8 cyclic aliphatic group and R₃ and R₄ are methyl, ethyl, phenyl, or thienyl.
- 5 114. The method of Claim 114 wherein R₇ and R₈ are both methyl or wherein R₇ and R₈, taken together, are propylene or butylene.
115. The method of Claim 114 wherein R₇ is -H and R₈ is lower alkyl, thienyl, phenyl or benzyl.
- 10 116. The method of Claim 114 wherein R₁ and R₂ are both a C3-C8 cyclic aliphatic substituted with one or more groups selected from -OH, -Br, -Cl, -I, -F, -OR^a, -O-COR^a, -COR^a, -CN, -NO₂, -COOH, -SO₃H, -NH₂, -NHR^a, -N(R^aR^b), -COOR^a, -CHO, -CONH₂, -CONHR^a, -CON(R^aR^b), -NHCOR^a, -NRCOR^a, -NHCONH₂, -NHCONR^aH, -NHCON(R^aR^b), -NR^cCONH₂, -NR^cCONR^aH, -NR^cCON(R^aR^b), -C(=NH)-NH₂, -C(=NH)-NHR^a, -C(=NH)-N(R^aR^b), -C(=NR^c)-NH₂, -C(=NR^c)-NHR^a, -C(=NR^c)-N(R^aR^b), -NH-C(=NH)-NH₂, -NH-C(=NH)-NHR^a, -NH-C(=NH)-N(R^aR^b), -NH-C(=NR^c)-NH₂, -NH-C(=NR^c)-NHR^a, -NH-C(=NR^c)-N(R^aR^b), -NR^dH-C(=NH)-NH₂, -NR^d-C(=NH)-NHR^a, -NR^d-C(=NH)-N(R^aR^b), -NR^d-C(=NR^c)-NH₂, -NR^d-C(=NR^c)-NHR^a, -NR^d-C(=NR^c)-N(R^aR^b), -NHNH₂, -NHNHR^a, -NHR^aR^b, -SO₂NH₂, -SO₂NHR^a, -SO₂NR^aR^b, -CH=CHR^a, -CH=CR^aR^b, -CR^c=CR^aR^b, -CR^c=CHR^a, -CR^c=CR^aR^b, -CCR^a, -SH, -SR^a, -S(O)R^a, -S(O)₂R^a, alkyl groups, substituted alkyl group, non-aromatic heterocyclic group, substituted non-aromatic heterocyclic group, benzyl group, substituted benzyl group, aryl group or substituted aryl group wherein
- 15 20 25 R^a-R^d are each independently an alkyl group, substituted alkyl group, benzyl, substituted benzyl, aromatic or substituted aromatic group, or, -NR^aR^d, taken together, can also form a substituted or unsubstituted non-aromatic heterocyclic group.
- 30 117. A method of treating a subject with cancer, said method comprising administering to the subject an effective amount of taxol or a taxol analog and an effective amount of a compound represented by the following structural formula:



or a physiologically acceptable salt thereof, wherein:

Y' is a covalent bond or -CR₇R₈-;

5 R₁ and R₂ are both a substituted or unsubstituted aliphatic group;

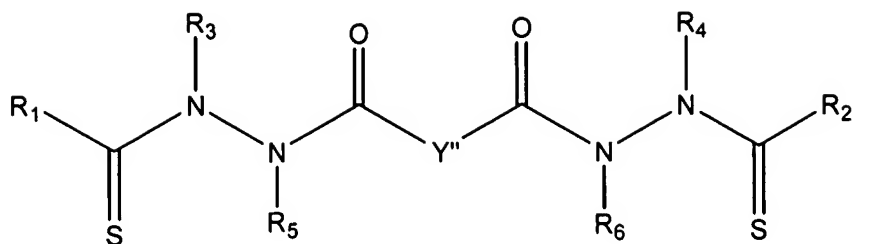
R₃ and R₄ are both -H, methyl or ethyl; and

R₇ is -H and R₈ is -H or methyl.

118. The method of Claim 117 wherein R₁ and R₂ are both C3-C8 cyclic aliphatic group
 10 substituted with one or more groups selected from -OH, -Br, -Cl, -I, -F, -OR^a, -O-
 COR^a, -COR^a, -CN, -NO₂, -COOH, -SO₃H, -NH₂, -NHR^a, -N(R^aR^b), -COOR^a,
 -CHO, -CONH₂, -CONHR^a, -CON(R^aR^b), -NHCOR^a, -NRCOR^a, -NHCONH₂,
 -NHCONR^aH, -NHCON(R^aR^b), -NR^cCONH₂, -NR^cCONR^aH, -NR^cCON(R^aR^b),
 -C(=NH)-NH₂, -C(=NH)-NHR^a, -C(=NH)-N(R^aR^b), -C(=NR^c)-NH₂, -C(=NR^c)-
 15 NHR^a, -C(=NR^c)-N(R^aR^b), -NH-C(=NH)-NH₂, -NH-C(=NH)-NHR^a, -NH-C(=NH)-
 N(R^aR^b), -NH-C(=NR^c)-NH₂, -NH-C(=NR^c)-NHR^a, -NH-C(=NR^c)-N(R^aR^b), -NR^dH-
 C(=NH)-NH₂, -NR^d-C(=NH)-NHR^a, -NR^d-C(=NH)-N(R^aR^b), -NR^d-C(=NR^c)-NH₂,
 -NR^d-C(=NR^c)-NHR^a, -NR^d-C(=NR^c)-N(R^aR^b), -NHNH₂, -NHNHR^a, -NHR^aR^b,
 -SO₂NH₂, -SO₂NHR^a, -SO₂NR^aR^b, -CH=CHR^a, -CH=CR^aR^b, -CR^c=CR^aR^b,
 20 -CR^c=CHR^a, -CR^c=CR^aR^b, -CCR^a, -SH, -SR^a, -S(O)R^a, -S(O)₂R^a, alkyl groups,
 substituted alkyl group, non-aromatic heterocyclic group, substituted non-aromatic
 heterocyclic group, benzyl group, substituted benzyl group, aryl group or substituted
 aryl group wherein R^a-R^d are each independently an alkyl group, substituted alkyl
 group, benzyl, substituted benzyl, aromatic or substituted aromatic group, or, -NR^aR^d,
 25 taken together, can also form a substituted or unsubstituted non-aromatic
 heterocyclic group.

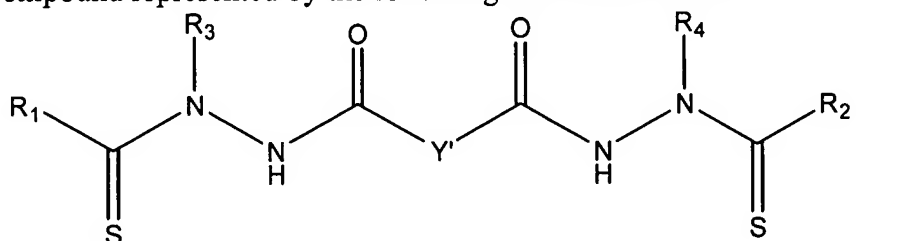
119. The method of Claim 89 wherein R₅ and R₆ are the same.

30 120. The method of Claim 119 wherein the compound is represented by the following
 structural formula:



wherein Y'' is a covalent bond or -CH₂-.

- 5 121. The method of Claim 120 wherein R₅ and R₆ are both a lower alkyl group or a phenyl group.
122. The method of Claim 121 wherein R₅ and R₆ are both a methyl group.
- 10 123. The method of Claim 120 wherein R₁ and R₂ are both a C3-C8 cyclic aliphatic or a substituted C3-C8 cyclic aliphatic group; R₃ and R₄ are both a lower alkyl group; and R₅ and R₆ are both a lower alkyl group.
- 15 124. A method of treating a subject with cancer, said method comprising administering to the subject an effective amount of taxol or a taxol analog and an effective amount of a compound represented by the following structural formula:



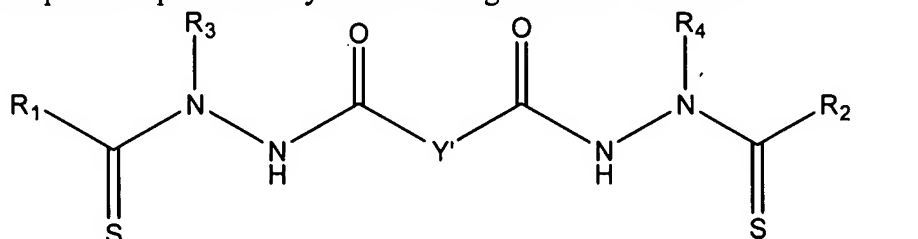
or a physiologically acceptable salt thereof, wherein Y' is a covalent bond or -CR₇R₈-; and wherein

- 20 a) R₁ and R₂ are both cyclopropyl; R₃ and R₄ are both methyl; R₇ and R₈ are both -H;
- b) R₁ and R₂ are both cyclopropyl; R₃ and R₄ are both ethyl; R₇ and R₈ are both H;
- 25 c) R₁ and R₂ are both cyclopropyl; R₃ and R₄ are both methyl; R₇ is methyl; R₈ is -H;

- d) R₁ and R₂ are both 1-methylcyclopropyl; R₃ and R₄ are both methyl; Y' is bond;
- e) R₁ and R₂ are both 1-methylcyclopropyl; R₃ and R₄ are both methyl; R₇ and R₈ are both -H;
- 5 f) R₁ and R₂ are both 1-methylcyclopropyl; R₃ and R₄ are both methyl; R₇ is methyl and R₈ is -H;
- g) R₁ and R₂ are both 1-methylcyclopropyl; R₃ and R₄ are both methyl; R₇ is ethyl and R₈ is -H;
- h) R₁ and R₂ are both 1-methylcyclopropyl; R₃ and R₄ are both methyl; R₇ is *n*-propyl and R₈ is -H;
- 10 i) R₁ and R₂ are both 1-methylcyclopropyl; R₃ and R₄ are both methyl; R₇ and R₈ are both methyl;
- j) R₁ and R₂ are both 1-methylcyclopropyl; R₃ and R₄ are both ethyl; R₇ and R₈ are both -H;
- 15 k) R₁ and R₂ are both 1-methylcyclopropyl; R₃ is methyl, and R₄ is ethyl; R₇ and R₈ are both -H;
- l) R₁ and R₂ are both 2-methylcyclopropyl; R₃ and R₄ are both methyl; R₇ and R₈ are both -H;
- m) R₁ and R₂ are both 2-phenylcyclopropyl; R₃ and R₄ are both methyl; R₇ and R₈ are both -H;
- 20 n) R₁ and R₂ are both 1-phenylcyclopropyl; R₃ and R₄ are both methyl; R₇ and R₈ are both -H;
- o) R₁ and R₂ are both cyclobutyl; R₃ and R₄ are both methyl; R₇ and R₈ are both -H;
- 25 p) R₁ and R₂ are both cyclopentyl; R₃ and R₄ are both methyl; R₇ and R₈ are both -H;
- q) R₁ and R₂ are both cyclohexyl; R₃ and R₄ are both methyl; R₇ and R₈ are both -H;
- r) R₁ and R₂ are both cyclohexyl; R₃ and R₄ are both phenyl; R₇ and R₈ are both -H;
- 30 s) R₁ and R₂ are both methyl; R₃ and R₄ are both methyl; R₇ and R₈ are both -H;
- t) R₁ and R₂ are both methyl; R₃ and R₄ are both *t*-butyl; R₇ and R₈ are both -H;
- u) R₁ and R₂ are both methyl; R₃ and R₄ are both phenyl; R₇ and R₈ are both -H;
- v) R₁ and R₂ are both *t*-butyl; R₃ and R₄ are both methyl; R₇ and R₈ are both -H;
- 35 w) R₁ and R₂ are ethyl; R₃ and R₄ are both methyl; R₇ and R₈ are both -H; or

- x) R₁ and R₂ are both *n*-propyl; R₃ and R₄ are both methyl; R₇ and R₈ are both -H.

125. A method of treating a subject with cancer, said method comprising administering to the subject an effective amount of taxol or a taxol analog and an effective amount of a compound represented by the following structural formula:



or a physiologically acceptable salt thereof, wherein Y' is a covalent bond or -CR₇R₈-, wherein:

- R_1 and R_2 are both cyclopropyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H;
- R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both methyl; Y' is bond;
- R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both ethyl; R_7 and R_8 are both -H;
- R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both methyl; R_7 is methyl; R_8 is -H;
- R_1 and R_2 are both 1-methylcyclopropyl; R_3 and R_4 are both ethyl; R_7 and R_8 are both -H; or
- R_1 and R_2 are both methyl; R_3 and R_4 are both methyl; R_7 and R_8 are both -H.

20 f) R_1 and R_2 are both methyl; R_3 and R_4 are both methyl; R_7 and R_8 are both $-H$.